

WHAT IS CLAIMED IS:

1. A method of making a polymeric tubular layer of an expandable medical device or component, comprising:
  - a) placing a polymeric tubular layer having a length in a lumen of a tube, with the polymeric tubular layer in the lumen of the tube being disposed on a mandrel;
  - b) longitudinally stretching the tube to a stretched configuration and restraining the tube in the stretched configuration;
  - c) attaching the tube in the stretched configuration to the polymeric tubular layer;
  - d) unrestraining the tube to release the tube from the stretched configuration so that the length of the tube decreases and thereby longitudinally compresses the polymeric tubular layer;
  - e) detaching the tube from the compressed polymeric tubular layer;and
  - f) removing the compressed polymeric tubular layer from the lumen of the tube and from the mandrel, to form the polymeric tubular layer of the expandable medical device.
2. The method of claim 1 wherein attaching the tube in the stretched configuration to the polymeric tubular layer comprises applying a radially inward force to the tube.
3. The method of claim 2 wherein the tube and the polymeric tubular layer therein are in a housing, and attaching the tube in the stretched configuration to the polymeric tubular layer comprises exposing the tube with the polymeric tubular

member therein to a pressurized fluid introduced into the housing, to thereby apply the radially inward force to the tube.

4. The method of claim 3 wherein the pressurized fluid is air introduced into the housing at a sufficient pressure to radially restrain the polymeric tubular layer, so that the longitudinally compressed polymeric tubular layer is substantially free of wrinkles.

5. The method of claim 3 wherein the pressurized fluid is air introduced into the housing at a pressure of about 100 to about 200 psi.

6. The method of claim 3 wherein the tube comprises a polymer having a higher resistance in the axial direction than in the radial direction, and the pressurized fluid is air introduced into the housing at a pressure of about 100 to about 200 psi.

7. The method of claim 1 wherein the tube comprises an elastomeric polymer and the elastomeric polymer tube is stretched at least about 120%.

8. The method of claim 1 wherein the tube comprises an outer layer of a first polymer, and an inner layer extending at least along the length of the polymeric tubular layer and formed of a second polymer having a higher coefficient of friction than the outer layer first polymer.

9. The method of claim 1 including repeating b), c), d), and f) one or more times before g).

10. The method of claim 1 wherein the polymeric tubular layer is compressed uniformly along the length thereof to a final percent compression of about the 30% to about 65%.

11. The method of claim 1 wherein the polymeric tubular layer comprises a porous polymer selected from the group consisting of expanded

polytetrafluoroethylene and ultra high molecular weight polyethylene, and including heating the compressed polymeric tubular layer after removal from the tube lumen.

12. The method of claim 1 wherein the mandrel has lubricious sheaths thereon longitudinally adjacent to either end of the polymeric tubular layer, and removing the compressed polymeric tubular layer from the lumen of the tube comprises pushing or pulling the compressed polymeric tubular layer and the mandrel from the lumen of the intact tube.

13. A method of making a catheter having a balloon with at least one polymeric tubular layer, comprising:

- a) placing a polymeric tubular layer having a length in a lumen of a tube, with the polymeric tubular layer in the lumen of the tube being disposed on a mandrel;
- b) longitudinally stretching the tube to a stretched configuration and restraining the tube in the stretched configuration;
- c) attaching the tube in the stretched configuration to the polymeric tubular layer;
- d) unrestraining the tube to release the tube from the stretched configuration so that the length of the tube decreases and thereby decreases the length of the polymeric tubular layer by longitudinally compressing the polymeric tubular layer;
- e) detaching the tube from the compressed polymeric tubular layer;
- f) removing the compressed polymeric tubular layer from the lumen of the tube and from the mandrel, to form the at least one polymeric tubular layer of the catheter balloon; and

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g) securing the catheter balloon polymeric tubular layer to a catheter shaft, to form the balloon catheter.

14. The method of claim 13 wherein the polymeric tubular layer comprises a porous polymer selected from the group consisting of expanded polytetrafluoroethylene and ultra high molecular weight polyethylene, and including securing an elastomeric tubular layer to the compressed polymeric tubular layer after g), so that the catheter balloon is a multilayered catheter balloon.